



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/556,726

04/28/2006

Keiichi Ohata

040373-0364

4998

22428 7590 11/25/2008  
FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER

LEE, BENNY T

ART UNIT

PAPER NUMBER

2817

MAIL DATE

DELIVERY MODE

11/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/556,726	<b>Applicant(s)</b> OHATA ET AL.	
	<b>Examiner</b> Benny Lee	<b>Art Unit</b> 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7; 2; 8,10-14; 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 2817

The disclosure is objected to because of the following informalities: Note that reference label “Vc” appearing in Fig. 7 still needs a corresponding description in the specification description of that drawing figure. Appropriate correction is required.

Claims 4, 6, 7; 11, 13, 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, 11, note that it is unclear with respect to which one of the “feeder lines” is the recitation of “said waveguide tube” intended in each claim. Clarification is needed.

In claims 6, 13, note that it is unclear which one of the “at least one diode” is intended by the recitation of “said diode” in each claim. Clarification is needed. Also, note that these claims need to make clear that the “at least one diode”, when properly biased, functions to provide the effective “conductive wall” as recited in claims 5, 12 from which these claims respectively directly depend from for a complete characterization.

In claims 7, 14, note that it is unclear whether the recitation of “a conducting plate”, which is movable, can properly characterize an effective conducting wall of the type intended by claims 5, 12 from which these claims respectively directly depend from. Clarification is needed.

The following claims have been found to be objectionable for reasons set forth below:

In claim 1, fourth paragraph & claim 8, 5<sup>th</sup> paragraph, note that “each section structure” should correctly be --each selection structure--.

In claim 1, fourth paragraph; claim 5; claim 8, 5<sup>th</sup> paragraph; claim 9, 8<sup>th</sup> paragraph: note that --a respective-- should be inserted between “cut off” & “one” at each instance for an appropriate characterization.

Art Unit: 2817

In claim 1, last paragraph; claim 2, 6<sup>th</sup> paragraph; claim 9, 8<sup>th</sup> paragraph: note that --one-- should be inserted after “respective” for an appropriate characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gerstenberg et al.

Gerstenberg et al discloses a feeder waveguide (e.g. a multi-port microwave launcher) comprising a plurality of hollow waveguides (e.g. waveguide arms 24a, 24b, 24c, 24d) connected as branched waveguides at a junction with a hollow waveguide hub (26, functioning as a main feeder waveguide) arranged with a plurality of controllably electrically activated microwave barriers (e.g. 38a, 38b, 38c, 38d, functioning as a waveguide switching or selection structure/arrangement) located at the junction to selectively feed a microwave beam (36) from the entry port (30), coupled to the waveguide hub (26), to appropriate ones of the plurality of waveguide arms to be outputted to appropriate ones of waveguide ports (34a, 34b, 34c, 34d). Note that one or more of the waveguide arms (24a, 24b, 24c, 24d) can be selectively connected to the waveguide hub (26) through the individual and independent selection one or more corresponding microwave barriers (38a, 38b, 38c, 38d) as described at column 3, lines 59, 60 (i.e. the selection of any selectable microwave barrier is not dependent on or is affected by the selection of any other microwave barrier). Note that each one of the waveguide barriers (38a, 38b, 38c, 38d) is physically located at the junction and include ionizable gaseous discharge

Art Unit: 2817

structures, which when activated, creates an effective conductive wall to reflect the microwave energy and thus prevents microwave energy from entering the corresponding waveguide arm, as described at column 3, lines 60-64. Furthermore, since there are multiple waveguide ports (i.e. 34a-34d), then such multiple ports must necessarily be capable of providing a multi-point communication arrangement (i.e. each port can provide communication to a different point in the communication system).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerstenberg et al in view of Hershberger (of record).

Gerstenberg et al discloses the claimed invention except for the individually selectable activated microwave barriers being located at a junction and not located within the individual waveguide arms at a distance that is a multiple of a one-half wavelength distance from the junction, such as recited in claim 2.

Art Unit: 2817

Hershberger (e.g. Fig. 1) discloses a waveguide system comprising a feeder waveguide (e.g. first waveguide 2) which branches into branch waveguides (3, 4) at a junction. Note that the branch waveguides are connected or terminated relative to respective load devices (e.g. antennas at column 2, line 44). Moreover, note that each branch waveguide (3, 4) includes a corresponding slot (e.g. 7, 8) through which a vane plate (5) can pass into the waveguide. Note that the location of the slots (7, 8) and the vane (5) is at a distance which is an integral multiple of one-half wavelength from the junction (e.g. see column 2, lines 49-52) as to permit the high impedance caused by being reflected off of the vane to appear as a high impedance at the junction (e.g. see column 1, lines 40-43).

Accordingly, it would have been obvious to have modified the individually selectable multi-port launcher configuration in Gerstenberg et al by alternatively locating the individually selectable activated microwave barriers (e.g. 38a-38d) within each microwave arm (e.g. 24a-24d) at a distance of a multiple of one half wavelength from the junction with waveguide hub (26) instead of at the junction. Such a modification would have been considered obvious since it would provided a configuration which provides the same functional effect as the microwave barriers located at the junction, but provides the additional advantage of reflecting high impedance at the junctions, such as taught by Hershberger, thereby suggesting the obviousness of such a modification.

Claims 1, 3, 5; 8, 10, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al (of record) in view of Gerstenberg et al.

Frank et al (e.g. Figs. 3a-3c) discloses a feeder waveguide comprises a distribution module with a waveguide distribution network (34) of the waveguide type. Note that the

Art Unit: 2817

waveguide distribution network includes an input port (35), a plurality of branched output ports (e.g. 30) and a plurality of branched waveguide tubes connected to the input port at a junction (e.g. see Fig. 3b). Furthermore, as evident from Figs. 4a, 4b, such a waveguide distribution network has output ports (30) thereof connected to a sectoral antenna (e.g. 40). However, Frank et al differs from the claimed invention in that it lacks a blocking means located at the junction.

Gerstenberg et al provides an exemplary teaching of locating an individually selectable microwave barrier switch at the junction between a feeder waveguide or waveguide hub and branched waveguide arms to provide an individually selective flow of microwave energy from a waveguide entry port (30) to selected ones of the branched waveguide arms at ports (34a-34d).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added the individually selectable microwave barriers to the junction in the waveguide distribution network of Frank et al, such as taught by Gerstenberg et al. Such a modification would have been considered obvious since such a configuration would have imparted to the Frank et al antenna system the capability of operating in a multi-point communication system (i.e. the individually selectable microwave barriers at the junction permits operation in a multi-point mode), thereby suggesting the obviousness of the modification.

Claims 2; 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al (of record) in view of Gerstenberg et al and Hershberger (of record) taken in combination.

As described in the preceding rejection, Frank et al discloses the claimed invention except for the waveguide switching arrangement being located in the branch waveguides at a distance of an integral multiple of one half wavelength from the junction of the waveguide distribution network for a sectoral antenna.

Art Unit: 2817

As described in an above rejection, the combination of Gerstenberg et al & Hershberger discloses an exemplary waveguide branching arrangement for a plural multi-point antenna system. In particular, note the obvious placement of the waveguide switching arrangement in the branch waveguide at a distance which is an integral multiple of one half wavelength from the junction of the branching arrangement.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added the waveguide switching arrangement to the junction in the waveguide distribution network of Frank et al, such as taught by the combination of Gerstenberg et al & Hershberger. Such a modification would have been considered obvious since it would have imparted to the Frank et al antenna system the capability of individually and independently selectively switching the plural antennas of the antenna system, thereby suggesting the obviousness of such a modification.

Claims 4; 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claims 1, 8, respectively above, and further in view of Fathy et al (of record).

Note that the above obviousness combination discloses the claimed invention except for the waveguide distribution network being waveguides tubes comprised of metal layers and conductive vias being disposed on a circuit board.

Fathy et al (e.g. Figs. 1, 2) discloses an antenna array (100), which includes a branch waveguide tube (200) having top and bottom metal walls (202, 204) interconnected by conductive vias (216) all of which are embedded in one or more ceramic layer (see column 6, lines 60-62), which inherently define a circuit board.



Art Unit: 2817

Accordingly, it would have been obvious in view of the references, taken a whole, to have alternatively realized the waveguide distribution network of the above obviousness combination as a branching waveguide tube distribution network formed on a ceramic circuit board as taught by Fathy et al. Such a modification would have been considered an obvious substitution of art recognized equivalent waveguide distribution systems (i.e. the branching network in Fathy et al functions equivalently to distribute electromagnetic energy in substantially the same manner as in the combination), thereby suggesting the obviousness of such a modification.

Claims 6, 7; 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claims 5, 12, respectively above, and further in view of Berman et al (of record).

The above obviousness combination discloses the claimed invention except for the waveguide switching arrangement being comprised of a diode responsive to forward and reverse bias voltages and a mechanically movable conductive plate.

Berman et al provides an exemplary teaching of a waveguide switching arrangement, which includes among the switching configurations, a mechanical switching configuration (e.g. Fig. 9), an electrical switching arrangement (e.g. a diode as in Fig. 10) and an ionizable gaseous discharge structure (e.g. Fig. 11), all of which functionally can block or reflect electromagnetic energy from propagating in a respective waveguide, when activated.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have further modified the above obviousness combination to have realized the switching configuration of the combination as a diode or a movable conductive structure as taught in

Art Unit: 2817

Berman rather than the gaseous discharge microwave barrier as taught in the above combination. Such a further modification would have been considered an obvious substitution of art recognized equivalent switching configurations, especially since Berman et al recognizes such a functional equivalents between a diode switching configuration or a mechanically movable switching configuration (e.g. a movable plunger) and a gaseous discharge microwave barrier in providing the required reflecting or blocking of electromagnetic energy, thereby suggesting the obviousness of such a modification. Moreover, note that as an obvious consequence of the modification with a switching diode, such diode must necessarily be responsive to forward and reverse biased to control the desired switching state, as would have been known to those of ordinary skill in the art.

Applicant's arguments filed 5 August 2008 have been fully considered but they are not persuasive.

With regard to the rejection of claims based on prior art, applicants' have asserted that the prior art references used in each one of the rejections are deficient in that they fail to disclose that the selection or switching structure for each waveguide is "independent" from the selection structure in any other waveguide. In particular, it is noted that each of the relevant prior art references, there is an interdependence between selection or switching structures in the individual waveguides (e.g. if one waveguide is selected to be in an ON mode then the other waveguide must be in an OFF mode, etc). Furthermore, it is argued that the prior art references also do not disclose a multi-point communication arrangement.

In considering applicants' arguments, the examiner must concur with applicants' assessment of the prior art and thus respectfully withdraws the rejections based on such prior art.

Art Unit: 2817

However, the examiner still believes that the inventive concept asserted by applicants' is not patentable, especially when view in light of the newly cited Gerstenberg et al reference. As pointed out above, the Gerstenberg et al reference provides an exemplary teaching or suggestion of the concept of a waveguide switching arrangement, where the switching or selection structure associated with a particular waveguide is individually or independently selectable relative to the selection structure associated with any other waveguide, thereby obviating the deficiencies of the withdrawn prior art references. Furthermore, as pointed out in the above rejections, because of the multi-port branched waveguide configuration in Gerstenberg et al, such a configuration necessarily is capable of providing for a multi-point communication arrangement (i.e. each port can provide a microwave signal or beam to a particular communication point).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

**/BENNY LEE/  
PRIMARY EXAMINER  
ART UNIT 2817**

B. Lee